

*To be treated as non-existent.*

*Species the types of which are not now to be found in the British Museum.*

*Spiniger bipustulatus*, Walk. Cat. Het. vii. p. 163, n. 55 (1873).

*Acanthaspis inæqualis*, Walk. loc. cit. p. 168, n. 5.

*Reduvius pyrrhophorus*, Walk. loc. cit. p. 196, n. 48.

*Conorhinus arenarius*, Walk. loc. cit. viii. p. 18, n. 28.

*Iygotlampis concolor*, Walk. loc. cit. p. 37, n. 19.

XXVIII.—*A Revision of the Fishes of the Family*  
Stromateidæ. By C. TATE REGAN, B.A.

[Concluded from p. 131.]

CENTROLOPHUS.

*Centrolophus*, Lacep. Hist. Nat. Poiss. iv. p. 441 (1802).

*Pompilus*, Lowe, Proc. Zool. Soc. 1839, p. 81.

This genus is distinguished from *Lirus* by the elongated body and the maxillary slipping under the præorbital for the entire length of its upper edge. The spines of the dorsal and anal are slender, indistinct, and graduating. Seven branchiostegals. 25 vertebræ.

*Synopsis of the Species.*

- a. Lateral line with a short curve above the pectoral,  
thence running along the middle of the body.  
D. 45. A. 30 ..... 1. *C. brittanicus*.
- b. Lateral line with a rather long curve. D. 37-41.  
A. 23-25.  
Dorsal fin rounded..... 2. *C. niger*,  
Dorsal fin slightly emarginate in its posterior half. 3. *C. mauricus*.

*Centrolophus brittanicus*, Gthr.

*Centrolophus brittanicus*, Günther, Cat. ii. p. 402 (1860).

This species is known only from one specimen from Polperro, Cornwall, which is not well stuffed, so that accurate measurements are not possible. The body seems to be rather more elongated than in *C. niger*, the head rather smaller. D. 45. A. 30. The fin-rays are broken off short. The base of the dorsal is longer relatively to the total length of the body, the base of the anal shorter than in *C. niger*. Lateral line with a short curve above the pectoral, then running along the middle of the body. In other characters very similar to *C. niger*.

Total length 520 millim.

*Centrolophus niger*, Gmelin.*Centrolophus pompilus*, Cuv. & Val.

To synonymy given by Jordan &amp; Evermann, Fishes N. Amer. p. 963, add:—

*Schedophilus elongatus*, Johnson, Proc. Zool. Soc. 1862, p. 175.

Depth of body about 4 times in total length, length of head  $4\frac{1}{3}$  to 5 times. Snout as long as or a little longer than the eye, the diameter of which is  $4-4\frac{3}{4}$  times in length of head. Interorbital width about  $3\frac{1}{2}$  times in length of head. Maxillary extending to below anterior quarter of eye. Caudal peduncle  $1\frac{4}{5}$  to 2 times as long as deep. D. 37-41, with a few indistinct spines anteriorly; the rays increasing in length to about the twelfth, thence decreasing to the last. A. III 20-22. Pectorals about  $\frac{2}{3}$  the length of head, longer than ventrals. Caudal slightly forked. Sc. 185-205  $\frac{23-28}{58-70}$ , rather deciduous in the adult, each scale pierced by a pore. Lateral line with a long curve, becoming straight above the origin of the anal. Dark brown.

Total length 480 millim.

Mediterranean and North Atlantic.

\**Centrolophus maoricus*.*Centrolophus maoricus*, Ogilby, Rec. Austral. Mus. ii. 1893, p. 64.

Depth of body 4 times in total length, length of head  $4\frac{1}{2}$  times. Snout a little longer than the eye, the diameter of which is a little more than 4 times in the length of head and rather less than the interorbital width. Maxillary reaching to below anterior quarter of orbit. D. 38, the rays increasing in length to the twelfth to fourteenth, then becoming abruptly shorter, the posterior part of the fin being emarginate. A 25, exactly half as long as the dorsal. Pectoral less than half the length of head; ventrals as long as the snout. Scales small, each pierced by a central circular pore. Lateral line decurved, becoming straight below the highest part of the dorsal. Uniform brown, darkest above; the sides of the head washed with dull blue, the fins and opercles with gold.

New Zealand.

## LIRUS.

*Leirus*, Lowe, Proc. Zool. Soc. i. p. 143 (1833).†*Mupus*, Cocco.†*Schedophilus*, Cocco, Giorn. Innom. Mess. Ar. 3, No. 57, p. 57 (1834).*Crius*, Valenciennes in Webb & Berthel. Hist. Nat. J. Can., Poiss. ii. pt. 2, p. 45 (1836-44).

*Palinurus*, Dekay, Zool. N. York, iv. p. 118 (1842).

*Hyperoglyphe*, Günther, Cat. i. p. 337 (1859).

*Palinurichthys*, Gill, Proc. Ac. Philad. 1860, p. 20.

*Pammelas*, Günther, Cat. ii. p. 485 (1860).

Body ovate or oblong-ovate, compressed; mouth small or moderate; palate without teeth; premaxillaries slightly protractile; maxillary more or less exposed, with small supplemental bone. Upper surface of head with a spongy porous integument; præoperculum generally distinctly spinate, sub- and interopercles denticulated. Five to seven branchiostegals; pseudobranchiæ present; gill-membranes not united; gill-rakers long. Scales small; lateral line curved anteriorly, becoming straight before reaching the caudal peduncle. Dorsal with IV-IX 19-46 rays. Anal with III 16-27 rays. Pectorals with 19-22 rays. Caudal forked or emarginate. Vertebrae 25.

### *Synopsis of the Species.*

- A. Dorsal spines graduating to the higher soft rays.
- a. Dorsal rays decreasing in length posteriorly.
- D. IV 41-46. A. III 24-27. Sc. 136-148  $\frac{26-30}{60-70}$  1. *L. medusophagus*.
- D. VIII-IX 27-30. A. III 21-24. Sc. 100-108  $\frac{21-22}{45-47}$  ..... 2. *L. maculatus*.
- D. VI-VII 29-33. A. III 21-24. Sc. 95-110  $\frac{13-16}{30-37}$  ..... 3. *L. ovalis*.
- D. VIII-IX 26-28. A. III 18. Sc. 80-90  $\frac{12-14}{24-30}$  4. *L. peruanus*.
- D. VIII 21. A. III 16. Sc. 75 ..... 5. *L. Valenciennesi*.
- b. Dorsal rays increasing in length to the last.
- D. VIII 28. A. III 18 ..... 6. *L. rotundicauda*.
- B. Dorsal spines short, not graduating to the higher soft rays. D. VII-IX 19-24. A. III 16-21.
- a. Lateral line becoming straight above origin of anal ..... 7. *L. japonicus*.
- b. Lateral line becoming straight above middle of anal ..... 8. *L. paucidens*.
- c. Lateral line becoming straight above last part of anal.
- Dorsal spines increasing in length to the fourth, thence subequal ..... 9. *L. perciformis*.
- Dorsal spines increasing in length to the fourth, thence decreasing ..... 10. *L. porosus*.

### *Lirus medusophagus.*

†*Schedophilus medusophagus*, Cocco, Giorn. Innom. Mess. Ann. iii. 1834, No. 27, p. 57.

Depth of body  $2\frac{1}{4}$  to  $2\frac{1}{2}$  times in total length, length of head 3 to 4 times. Snout as long as eye, the diameter of

which is 3 to 4 times in the length of head and less than the interorbital width. Maxilla extending to below middle of eye. D. 45-50, spines not distinct, rays increasing in length to about the twentieth, thence subequal to about the fortieth, thence decreasing rapidly to the last, the whole fin rounded. A. 27-30. Caudal rounded, its posterior border slightly emarginate. In very young specimens (35 millim.) the pectorals are rounded, shorter than the ventrals, which extend to about the fifth anal ray and equal the head in length; the longest dorsal rays are equal to  $\frac{2}{3}$  the depth of the body. In larger specimens (100 millim.) the ventrals reach the anus and the longest dorsal ray is equal to  $\frac{4}{5}$  the depth of body; in these the pectorals are broken. In a specimen figured by Günther (Trans. Zool. Soc. xi. p. 221, 1881), which is 240 millim. in total length, the ventrals appear to be less than half the length of the head, much shorter than the pectorals, which are no longer rounded, but have the upper rays longest; while the dorsal and anal fins are comparatively low. Sc. 136-148  $\frac{26-30}{60-70}$ . Lateral line curved anteriorly, becoming straight below the twelfth dorsal ray.

Pale olive, marbled with darker; vertical fins punctulated with black.

Total length 100 millim.

Pacific, Atlantic, Mediterranean.

### *Lirus maculatus.*<sup>1</sup>

*Schedophilus maculatus*, Günther, Cat. ii. p. 412 (1860).

*Schedophilus marmoratus*, Kner, SB. Ak. Wien, liv. 1866, p. 366.

Depth of body 2 to  $2\frac{1}{3}$  times in total length, length of head  $3\frac{1}{2}$  to  $3\frac{3}{4}$  times. Snout  $\frac{1}{2}$  to  $\frac{2}{3}$  of the diameter of the eye, which is 3 to  $3\frac{1}{4}$  times in the length of head and equal to the interorbital width. Maxillary scarcely reaches vertical from middle of eye. D. VIII-IX 27-30, the spines distinct and increasing in length to the last, the soft rays increasing in length to about the tenth, thence decreasing, the whole fin rounded. A. III 21-24, rounded. Ventrals extending beyond anus and nearly equal to length of head in specimens 44 millim. long,  $\frac{5}{7}$  of the distance from their origin to the anus and  $\frac{5}{9}$  the length of head in specimens 90 millim. long. Pectorals rounded. Sc. 100-108  $\frac{21-22}{45-47}$ . Lateral line with a long curve, becoming straight below the last quarter of the dorsal. Caudal apparently emarginate. Pale yellowish brown, with a purple tinge above, silvery beneath. Large blotches and bands of darker reddish brown, which extend on to the dorsal and anal fins, and also on the ventrals and

caudal, this latter always with a large brown spot at the base of each lobe.

Total length 44 millim.

Chinese Seas, South Seas, coasts of Australia.

*Lirus ovalis.*

*Centrolophus ovalis*, Cuv. & Val. ix. p. 346 (1833).

*Centrolophus crassus*, Cuv. & Val. t. c. p. 348.

† *Mypus imperialis*, Cocco.

*Leirus Bennettii*, Lowe, Trans. Camb. Phil. Soc. vi. 1834, p. 199, tab. v.

*Crius Bennettii*, Valenciennes in Webb & Berthel. Hist. Nat. I. Canar., Poiss. ii. pt. 2, p. 43 (1836-44).

*Crius Berthelotii*, Valenciennes l. c. p. 45, pl. ix.

*Pompilus Bennettii*, Lowe, Proc. Zool. Soc. 1839, p. 82.

*Schedophilus Berthelotii*, Günther, Cat. ii. p. 412 (1860).

*Centrolophus porosissimus*, Canestr. Mem. Acc. Tor. xxi. 1864, p. 365, pl. ii.

*Schedophilus Botteri* (Heck.), Steind. SB. Ak. Wien, lvii. 1868, p. 379.

It has twice happened that the same author has described a young and an adult example of this species as two different species, Valenciennes describing a specimen 170 millim. long as *Crius Berthelotii* and one of 600 millim. as *Crius Bennettii*, and Canestrini one of about 250 millim. as *Centrolophus porosissimus* and one of 440 millim. as *Centrolophus crassus*. Even allowing for the changes which take place during growth, some of the measurements given as to the height of the dorsal fin and the size of the eye are outside the limit for the species; this is probably due to different methods of measurement, and when the height of the dorsal fin is stated as  $\frac{1}{2}$  the depth of body, it was probably measured with the fin laid back and not extended, or else from the upper edge of the scaly sheath, this latter being included in the body depth; which would be a very natural error in large specimens, in which it is difficult to find the bases of the fin-rays. The eye in this species and throughout the family has a prominent circular lid, which extends to the outer margin of the iris, and it often happens in preserved specimens that this lid is torn or shrunk, thus apparently enlarging the size of the eye.

I append in tabular form the measurements of the specimens in the British Museum Collection and those described by various authors. The numbers in the various columns give in millimetres:—A, total length with caudal, and B, without caudal; C, depth of body; D, length of head, and E, of snout; F, eye-diameter; G, longest dorsal ray; H, length of pectoral, and K, of ventral; L, M, and N give the number of rays in the dorsal and anal fins and the number of scales.



The interorbital width is  $2\frac{2}{3}$  to 3 times in the length of head; maxillary extending to below anterior quarter of eye; caudal peduncle about as long as deep. The dorsal originates above the opercular cleft, and the rays increase in height to about the seventeenth, the whole fin being rounded. The caudal is slightly emarginate in the young, moderately forked in the adult. The lateral line has a long curve, becoming straight below about the twenty-sixth ray of the dorsal. Gill-rakers as long as gill-fringes, 16 on the lower part of the anterior arch. Præoperculum distinctly spinate in the young. Scales loosely inserted, numerous pores on the body which do not pierce the scales. Greenish brown above, silvery below; fins brown; the young with purplish spots on the sides, which are still present in a specimen 175 millim. in total length.

Atlantic; Mediterranean.

*\*Lirus peruanus.*

*Centrolophus peruanus*, Steind. SB. Ak. Wien, lxx. 1875, p. 384.

Depth of body  $3\frac{1}{4}$  times in total length, length of head 3 times. Snout a little longer than the eye, the diameter of which is 5 times in the length of head, interorbital width  $2\frac{2}{3}$  to  $2\frac{3}{5}$  times. Maxillary extending to below anterior margin of eye. D. VIII-IX 26-28, spines graduating to the higher soft rays, the soft fin highest anteriorly, the longest rays  $\frac{1}{3}$  to  $\frac{2}{5}$  of the length of head. A. III. 18, similar to soft dorsal. Pectorals falciform, as long as the head. Ventrals short, inserted behind the pectorals. Caudal lunate. Sc. 80-90  $\frac{12-14}{24-30}$ . Upper part of the body with dorsal and pectoral fins dark violet; lower part of body with anal and ventral fins golden, usually with small violet spots; sometimes violet streaks extending down from the ground-colour of the back over the sides.

Coast of Peru, in deep water. Common in the market at Callao.

*Lirus Valenciennesi.*

*Centrolophus Valenciennesi*, Moreau, Poiss. France, ii. p. 496, fig. 138 (1881).

This species is said to differ from *L. ovalis* in the lesser number of rays in the dorsal and anal. D. VIII 21. A. III 16. Sc. 75.

Mediterranean (Marseilles).

*\*Lirus rotundicauda.*

*Centrolophus rotundicauda*, Costa, Ann. Mus. Zool. Nap. vi. 1866, p. 84, tab. i.

Depth of body 3 times in total length, length of head  $3\frac{2}{3}$  times. Snout as long as the eye, the diameter of which is 4 times in the length of head. D. VIII 28, the rays gradually increasing in length to the last, which is equal in length to  $\frac{2}{3}$  the depth of the body below, and when laid back extends to the base of the caudal. A. III 18. Pectorals as long as ventrals,  $\frac{2}{3}$  the length of head. Caudal slightly emarginate, with rounded lobes. Sc. 85/30. Dull greenish above, silvery below, with obscure darker patches.

Total length 300 millim.

A single specimen from the Bay of Naples.

It seems chiefly to differ from *L. ovalis* in the form of the dorsal fin.

*\*Lirus japonicus.*

*Centrolophus japonicus*, Steind. Denk. Ak. Wien, xlix. 1885, p. 183.

Depth of body about equal to the length of head, about 3 times in the total length. Snout  $\frac{2}{3}$  of the eye-diameter, which is 3 times in the length of head and equal to the interorbital width. Maxillary extending to below the middle of the eye. Præoperculum denticulated. D. VIII 22, the spines short and weak, the last the highest and  $\frac{1}{4}$  the length of head; anterior soft rays highest,  $2\frac{2}{3}$  times in the length of head. A. III 19. Pectorals reach the anus. Ventrals inserted behind the pectorals, reaching halfway to the anal. Scales small, rather deciduous, 98–100 in a longitudinal series. Lateral line decurved, becoming straight above the origin of the anal. Grey-brown, dark above, clear below.

Total length 420 millim.

Seas of Japan.

*Lirus paucidens.*

*Lirus paucidens*, Günther, 'Challenger' Pelagic Fishes, p. 11, pl. ii. (1888).

Depth of body 2 to  $2\frac{1}{3}$  times in total length, length of head  $2\frac{1}{2}$  times. Snout shorter than eye, the diameter of which is about 3 times in length of head, less than interorbital width. Maxilla reaches to nearly below middle of eye. Caudal peduncle as long as deep. D. VII 23–24; the spines increase in length to the third, the rest subequal, the first soft ray much higher than the last spine, the soft fin rounded,

the highest rays more than half the length of the head. A. III 19-21, rounded, rather higher than soft dorsal. Pectorals rounded, rather longer than ventrals, which extend to anal. Caudal slightly emarginate. Sc. 100  $\frac{13-15}{34-36}$ . Lateral line with a long curve, becoming straight above middle of anal. Brown, pectorals and caudal white.

Total length 35 millim.

Surface of open sea between New Guinea and Japan.

### *Lirus perciformis.*

*Coryphæna perciformis*, Mitchill, Am. Month. Mag. ii. 1818, p. 244.

*Palinurichthys perciformis*, Gill, Proc. Ac. Philad. 1860, p. 29.

*Pammelas perciformis*, Günther, Cat. ii. p. 485 (1860).

(Further synonymy given in Jordan & Evermann, Fishes N. Am. i. p. 964.)

Depth of body  $2\frac{1}{2}$  times in total length, length of head 3 to  $3\frac{1}{3}$  times. Snout as long as the eye, the diameter of which is 4 to  $4\frac{3}{4}$  times in length of head; interorbital width  $2\frac{1}{2}$  times in length of head. Maxilla extends to below anterior quarter of eye. Caudal peduncle  $1\frac{1}{6}$  times as long as deep. D. VIII 19-21; the spines increase in length to the fourth, the others subequal, the first soft ray much higher than the last spine, the soft fin rounded. A. III 16-18, rounded. Pectorals a little longer than ventrals, about  $\frac{2}{3}$  length of head. Sc. 80-90  $\frac{12-14}{28-30}$ . Lateral line with a long curve, becoming straight below posterior dorsal rays. Greenish brown, fins dark.

Total length 240 millim.

North Atlantic.

### *Lirus porosus.*

*Diagramma porosa*, Richards. Ereb. & Terr., Fish. p. 26, figs. 5, 6 (1845)

*Hyperoglyphe porosa*, Günther, Cat. i. p. 337 (1859).

*Lirus porosus*, Günther, 'Challenger' Pelagic Fishes, p. 11 (1888).

Depth of body  $2\frac{1}{2}$  times in total length, length of head 3 to  $3\frac{1}{4}$  times. Snout as long as eye, the diameter of which is 4 times in length of head (3 times in very young specimens). Interorbital width 3 times in length of head. Maxilla nearly reaches to below middle of eye. Caudal peduncle  $1\frac{1}{4}$  times as long as deep. D. IX 20, the spines increasing in length to the fourth, decreasing from the sixth to the eighth, the ninth longer than the seventh; soft fin higher than the spinous, the soft rays decreasing in length from the third. A. III 16; longest rays of dorsal and anal not much more than  $\frac{1}{3}$  length of head. Ventrals nearly as long as pectorals, which are  $\frac{2}{3}$  length

of head. Caudal emarginate. Sc. 90-100  $\frac{14}{30}$ . Lateral line with a long curve, becoming straight below the posterior dorsal rays. Greenish brown above and on sides, silvery below; two or three series of darker spots on soft dorsal.

Total length 140 millim.

Coasts of Australia; Kermadec Islands.

#### STROMATEUS.

*Stromateus*, Artedi, Gen. p. 19 (1738); Cuv. & Val. ix. p. 372 (1833).

*Seserinus*, Cuv. & Val. t. c. p. 416.

Body ovate, compressed, covered with very small scales; mouth small; premaxillaries not protractile; maxillary exposed; no teeth on the palate; opercular bones entire or minutely denticulated; gill-membranes united, free from the isthmus; gill-rakers of moderate length; pseudobranchiæ present; six branchiostegals. A single dorsal fin, with III-IX 40-48 rays, the spines feeble, graduating. Anal long, with III 32-40 rays. Pectorals with 22 rays. Ventrals thoracic, absent in the adult, the pelvis not projecting as a spine. Caudal forked. 46 vertebræ.

#### *Synopsis of the Species.*

- A. Caudal lobes elongate, much longer than the head. 1. *S. fiatola*.  
 B. Caudal lobes about as long as the head.  
 Depth of body about twice in total length. . . . . 2. *S. microchirus*.  
 Depth of body about  $2\frac{1}{2}$  times in total length . . . . 3. *S. maculatus*.

#### *Stromateus fiatola.*

*Stromateus fiatola*, Linn. Syst. Nat. i. p. 432 (1766).

*Chrysostronus fiatoloides*, Lacep. iv. p. 697 (1802).

Depth of body 2 to  $2\frac{1}{2}$  times in total length, length of head about 4 times. Snout longer than the eye, the diameter of which is 5 to 8 times in the length of head, interorbital width about  $2\frac{1}{2}$  times. Maxillary not extending to below the eye. D. V-VI 38-40, rays increasing in length to the twelfth, which is about  $\frac{3}{4}$  the length of head, thence decreasing, the last 10 to 15 rays subequal,  $\frac{1}{4}$  to  $\frac{1}{3}$  the length of head. A. III 30-33. Pectorals nearly as long as the head. Caudal deeply forked, the lobes  $\frac{1}{3}$  of the depth of body. Gill-rakers about half as long as the eye-diameter, 10 to 12 on the lower part of the anterior arch. Dark purple on back and sides, silvery below; two or three rows of rounded dark blue spots above the lateral line and irregular longitudinal bands below it; inner surface of pectoral and tips of caudal lobes black.

Total length 340 millim.

Mediterranean, S. Africa.

*Stromateus microchirus.**Seserinus microchirus*, Cuv. & Val. ix. p. 416 (1833).*Stromateus microchirus*, Bonap. Faun. Ital., Pesc., with plate (1834).

Depth of body twice in total length, length of head 4 times. Snout longer than the eye, the diameter of which is  $5\frac{1}{2}$  times in the length of head, interorbital width  $2\frac{1}{3}$  times. Maxillary not extending to below the eye. D. 45-50, the rays increasing in length to the thirteenth, which is  $\frac{3}{5}$  the length of head, thence decreasing to the last. A. 35-37. Pectorals  $\frac{3}{4}$  the length of head. Caudal forked, the lobes as long as the head. Gill-rakers about  $\frac{1}{3}$  as long as the eye, 11 or 12 on the lower part of the anterior arch. Grey, fins darker; eight or nine blackish vertical bands on the sides.

Total length 125 millim.

Mediterranean, S. Africa.

*Stromateus maculatus.**Stromateus maculatus*, Cuv. & Val. ix. p. 399 (1833).

Depth of body  $2\frac{1}{2}$  times in total length, length of head  $4\frac{1}{4}$  times. Snout longer than the eye, the diameter of which is 5 times in the length of head, interorbital width 3 times. Maxillary not extending to below the eye. D. VII 40-43, the rays increasing in length to the tenth soft ray, which is half the length of head. A. III 38. Pectorals longer than the head. Caudal lobes as long as the head. Gill-rakers less than  $\frac{1}{3}$  the eye-diameter, 12 on the lower part of the anterior arch. Blue above, silvery below; numerous round dark spots on the upper half of the body.

Total length 200 millim.

Pacific coast of S. America.

## PEPRILUS.

*Rhombus*, Lacep. ii. p. 321 (1800); Cuv. & Val. ix. p. 401 (1833).*Peprilus*, Cuv. Règ. An. ii. p. 213 (1829).

This genus differs from *Stromateus* in that the pelvis projects through the skin as a prominent spine and the dorsal and anal fins are preceded by procurrent spines. Vertebrae 30-31. Branchiostegals 6 or 7. Gill-rakers of moderate length or long. Ventrals absent. The name *Rhombus* was proposed considerably before 1800 for a genus of Mollusca, and *Peprilus* must therefore be used for this genus. There appear to be five well-marked species—*P. paru*, *palometa*, *medius*, *simillimus*, and *triacanthus*—which are completely described in Jordan and Evermann, 'Fishies of North America,' vol. i. p. 965.

## STROMATEOIDES.

*Stromateoides*, Bleeker, Verh. Bat. Gen. xxiv. 1852, p. 19.

This genus differs from *Stromateus* in having the gill-membranes broadly united to the isthmus, in the absence of pseudobranchiæ, and in having very short gill-rakers. Branchiostegals 6 or 7. Vertebrae 35 or 36. Pectorals elongate, with 25-27 rays. Ventrals absent.

The subdivision of the genus into two genera—*Stromateoides*, with higher body, elevated vertical fins, and prominent trenchant dorsal and anal spines; and *Chondroplites*, with more oblong body, little elevated dorsal and anal fins, and concealed subcartilaginous dorsal and anal spines—is unnecessary, and seems due to a lack of acquaintance with the species, since the first two supposed differences are non-existent and the third is unimportant, as in *S. cinereus* the spines are concealed in the adult, and although stronger than those of *S. sinensis*, are formed on a similar plan; for in *S. sinensis* the spines have the pointed part set at an obtuse angle to the rest, and in *S. cinereus* the terminal part is similarly set at an angle, but is more expanded.

*Synopsis of the Species.*

Caudal emarginate or moderately forked . . . . . 1. *S. sinensis*.  
Caudal widely forked, the lower lobe longer . . . . . 2. *S. cinereus*.

*Stromateoides sinensis*.

*Stromateus sinensis*, Euphras. Vetensk. Ak. Nya Handl. Stockholm, ix. 1788, p. 53.

*Stromateus albus*, Cuv. & Val. ix. p. 388 (1833).

*Stromateus atous*, Cuv. & Val. t. c. p. 389.

*Stromateoides atokoia*, Bleeker, Verh. Bat. Gen. xxiv. 1852, p. 76.

Depth of body  $1\frac{1}{4}$  to  $1\frac{1}{3}$  times in total length, length of head  $3\frac{2}{3}$  to 4 times. Snout as long as the eye, the diameter of which is  $3\frac{2}{3}$  to  $4\frac{2}{3}$  times in the length of head, interorbital width twice. Maxillary extending to below anterior third of the eye. Caudal peduncle not as long as deep. D. 43-50, the spines feeble, concealed, rays increasing in length to the fifteenth to eighteenth, which is as long as the pectoral and  $1\frac{1}{2}$  times the length of head; thence they become abruptly shorter, the upper edge of the fin being concave, the posterior part rounded. A. 39-42, exactly similar to the dorsal. Caudal emarginate in the young, moderately forked in the adult. Scales small, deciduous. Brownish grey above, silvery below, with numerous small brown dots. Fins silver-grey at the base, blackish in their marginal parts.

Total length 180 millim.

Seas of India, Malaysia, and China.

*Stromateoides cinereus.*

*Stromateus cinereus*, Bloch, xii. p. 90, t. 420 (1793).

*Stromateus argenteus*, Bloch, t. c. p. 92, t. 421.

*Stromateus griseus*, Cuv. & Val. ix. p. 395 (1833).

*Stromateus candidus*, Cuv. & Val. t. c. p. 391.

*Stromateus securifer*, Cuv. & Val. t. c. p. 394.

*Stromateus punctatissimus*, Schleg. Faun. Japon., Poiss. p. 121, pl. lxx. (1850).

*Stromateoides cinereus*, Bleeker, Verh. Bat. Gen. xxiv. 1852, p. 75.

Depth of body  $1\frac{1}{3}$  to  $1\frac{2}{3}$  times in the total length, length of head 4 to 5 times. Snout as long as the eye, the diameter of which is 4 to 5 times in the length of head, interorbital width  $2\frac{1}{4}$  times. Maxillary almost extending to below middle of eye. Caudal peduncle as long as deep. D. VIII-X 36-47, the spines projecting in the young, concealed in the adult, their free ends expanded, with an anterior and posterior point, the soft rays increasing in length to about the tenth, thence becoming abruptly shorter, the last fifteen to twenty rays short, subequal. A. V-VII 35-46, similar to the soft dorsal, but with the anterior rays more produced, extending to below the middle of the caudal in the young, much shorter in the adult. Pectorals twice as long as the head in the adult. Caudal forked, with long slender lobes, the lower the longer, especially in the young. Scales small, thin, pierced by numerous minute pores. Purplish grey above, silver below. Fins silver-grey, dotted with black.

Total length 230 millim.

Seas of India, Malaysia, and China.

## APPENDIX.

Mr. Boulenger, who has kindly looked over the above paper and examined specimens of the various genera dealt with, was much struck with the fact that the pelvis is in all cases very loosely attached to the pectoral arch, a feature which I had not considered of much importance; and he suggested that I should examine *Tetragonurus*, which has been placed with or near the Atherinidæ. I find that this genus closely resembles *Cubiceps* or *Nomeus*, not only in general appearance, but also in the dentition and the structure of the mouth, and that the œsophagus is very similar to that of *Stromateus*, having on each side a muscular sac studded internally with rather soft papillæ. The last upper pharyngeals extend back as a pair of elongate toothed rods in the roof of the œsophagus. The Tetragonuridæ must certainly be regarded as allied to the Stromateidæ, differing only in

the peculiar scales, the shorter soft dorsal and anal, the œsophageal papillæ not toothed, and the pelvis quite separate from the pectoral arch. This suggests that the loose attachment of the pelvis in the Stromateidæ may be a primitive feature, a conclusion strengthened by the fact that they are among the few spiny-rayed fishes known to occur in the Cretaceous, the genera *Platycormus* and *Homosoma* having been referred by Dr. Smith Woodward, apparently with good reason, to this family. The Icosteidæ have been generally regarded as allied to the Stromateidæ; and in *Icosteus*, the only genus I have been able to examine, the pelvic bones do not even approach the pectoral arch, the ventrals being truly abdominal notwithstanding their rather anterior position.

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XXIX.—On the Hymenoptera collected by Mr. W. L. Distant in the Transvaal, South Africa, with Descriptions of supposed new Species. By Lieut.-Colonel C. T. BINGHAM.

[Continued from vol. ix. p. 353.]

Family Pompilidæ (cont.).

GENUS PSEUDAGENIA, Kohl.

*Pseudagenia Rossi*, sp. n.

♀. Black, the scape and basal four joints of the flagellum of the antennæ and the femora, tibiæ, and tarsi of all the legs ferruginous, the apical two joints of the tarsi more or less shaded with fuscous; wings brownish hyaline, iridescent in certain lights, with in the fore wing two obscure darker brown bars, one along the basal and subbasal nervures, the other spreading from the radial into third cubital and third discoidal cells. Head wider than the thorax, the clypeus very convex, its anterior margin rounded; antennæ filiform, planted low down just above the base of the clypeus; front very flat; the eyes lateral, reaching down to the base of the mandibles, their inner orbits parallel; vertex broad, lightly convex, passing by a gradual curve into the occiput. Thorax short, the pronotum rounded anteriorly; the mesonotum, scutellum, and postscutellum very convex, the latter two prominent; median segment rounded posteriorly, with a gradual slope to the apex; legs very long and slender, the posterior tibiæ minutely spined. Wings ample, the basal